

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

SHINDLER, Nigel  
Brookes Batchellor  
102-108 Clerkenwell Road  
London EC1M 5SA  
ROYAUME-UNI

|  |   |
|--|---|
| Date of mailing (day/month/year)<br>03 juillet 2001 (03.07.01) | IMPORTANT NOTIFICATION  |
| Applicant's or agent's file reference<br>NS/99096 WO           |   |
| International application No.<br>PCT/GB00/03202                | International filing date (day/month/year)<br>17 août 2000 (17.08.00) |

## 1. The following indications appeared on record concerning:

☐ the applicant      ☐ the inventor      ☒ the agent      ☐ the common representative

|  |                                |                    |
|--|--------------------------------|--------------------|
| Name and Address<br>SHINDLER, Nigel<br>Batchellor, Kirk & Co.<br>102-108 Clerkenwell Road<br>London EC1M 5SA<br>United Kingdom | State of Nationality           | State of Residence |
|  | Telephone No.<br>020 7253 1563 |                    |
|  | Facsimile No.<br>020 7253 1214 |                    |
|  | Teleprinter No.                |                    |

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person      ☐ the name      ☒ the address      ☐ the nationality      ☐ the residence

|  |                                |                    |
|--|--------------------------------|--------------------|
| Name and Address<br>SHINDLER, Nigel<br>Brookes Batchellor<br>102-108 Clerkenwell Road<br>London EC1M 5SA<br>United Kingdom | State of Nationality           | State of Residence |
|  | Telephone No.<br>020 7253 1563 |                    |
|  | Facsimile No.<br>020 7253 1214 |                    |
|  | Teleprinter No.                |                    |

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

|   |   |
|---|---|
| <input checked="" type="checkbox"/> the receiving Office                              | <input type="checkbox"/> the designated Offices concerned         |
| <input type="checkbox"/> the International Searching Authority                        | <input checked="" type="checkbox"/> the elected Offices concerned |
| <input checked="" type="checkbox"/> the International Preliminary Examining Authority | <input type="checkbox"/> other:                                   |

|   |  |
|---|--|
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland | Authorized officer<br><br>Maria Victoria CORTIELLO |
| Facsimile No.: (41-22) 740.14.35  | Telephone No.: (41-22) 338.83.38                   |

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE  
 in its capacity as elected Office

|  |  |
|--|--|
| <b>Date of mailing</b> (day/month/year)<br>21 June 2001 (21.06.01)             |  |
| <b>International application No.</b><br>PCT/GB00/03202                         | <b>Applicant's or agent's file reference</b><br>NS/99096 WO        |
| <b>International filing date</b> (day/month/year)<br>17 August 2000 (17.08.00) | <b>Priority date</b> (day/month/year)<br>17 August 1999 (17.08.99) |
| <b>Applicant</b><br>GREEN, Mino  |  |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 12 March 2001 (12.03.01)

☐ in a notice effecting later election filed with the International Bureau on:  
 \_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

|   |   |
|---|---|
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland<br>Facsimile No.: (41-22) 740.14.35 | Authorized officer<br>Olivia TEFY<br>Telephone No.: (41-22) 338.83.38 |
|---|---|

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|   |   |  |
|---|---|--|
| Applicant's or agent's file reference<br><b>NS/99096 W0</b>         | <b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |  |
| International application No.<br><b>PCT/GB 00/ 03202</b>            | International filing date (day/month/year)<br><b>17/08/2000</b>   | (Earliest) Priority Date (day/month/year)<br><b>17/08/1999</b> |
| Applicant<br><br><b>IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY ...</b> |   |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**A PROCESS FOR MAKING ISLAND ARRAYS**

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/03202

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L21/033 H01L21/308

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, IBM-TDB, PAJ, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| Y          | HAGINOYA, C. ET AL: "Nanostructure array fabrication with a size-controllable natural lithography"<br>APPLIED PHYSICS LETTERS,<br>vol. 71, no. 20,<br>17 November 1997 (1997-11-17), pages<br>2934-2936, XP002152782<br>abstract<br>page 2934, column 2, line 1 -page 2935,<br>column 1, line 22; figure 1<br>---<br>-/-- | 1-6,8,9               |

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## ° Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

15 November 2000

Date of mailing of the international search report

30/11/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Nesso, S

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
|--|--|-----------------------|
| Category   | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
| Y  | <p>GREEN M ET AL: "QUANTUM PILLAR STRUCTURES ON N+ GALLIUM ARSENIDE FABRICATED USING 'NATURAL' LITHOGRAPHY"</p> <p>APPLIED PHYSICS LETTERS, US, AMERICAN INSTITUTE OF PHYSICS, NEW YORK, vol. 62, no. 3, 18 January 1993 (1993-01-18), pages 264-266, XP000334805</p> <p>ISSN: 0003-6951</p> <p>abstract</p> <p>page 265, column 1, line 21 - line 31; figure 1</p> <p>---</p> | 1-6,8,9               |
| X  | <p>EP 0 506 146 A (MASSACHUSETTS INST TECHNOLOGY) 30 September 1992 (1992-09-30)</p> <p>abstract</p> <p>page 12, line 7 - line 16; figures 26A-26D</p> <p>---</p>  | 17,18                 |
| A  | <p>US 5 871 870 A (ALWAN JAMES J) 16 February 1999 (1999-02-16)</p> <p>abstract</p> <p>column 4, line 29 - line 43; figure 2</p> <p>column 5, line 62 - line 67</p> <p>column 6, line 20 - line 22; figure 5</p> <p>---</p>  | 1-9                   |
| A  | <p>DECKMAN, H. W. ET AL: "Natural lithography"</p> <p>APPLIED PHYSICS LETTERS, vol. 41, no. 4, 15 August 1982 (1982-08-15), page 377379</p> <p>XP000955278</p> <p>abstract</p> <p>page 378, column 2, line 21 - line 32; figures 3,4</p> <p>---</p>  | 1-5                   |
| P,X  | <p>TSUCHIYA, S. ET AL: "Structural Fabrication Using Cesium Chloride Island Arrays as a Resist in a Fluorocarbon Reactive Ion Etching Plasma"</p> <p>ELECTROCHEMICAL AND SOLID-STATE LETTERS, vol. 3, no. 1, January 2000 (2000-01), pages 44-46, XP002152784</p> <p>the whole document</p> <p>-----</p>   | 1-9                   |

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/03202

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---|---------------------|----------------------------|---------------------|
| EP 0506146                                | A | 30-09-1992          | DE 3176676 D               | 07-04-1988          |
|   |   |                     | DE 3177084 D               | 21-09-1989          |
|   |   |                     | DE 3177317 D               | 20-08-1998          |
|   |   |                     | DE 3177317 T               | 25-02-1999          |
|   |   |                     | EP 0049286 A               | 02-03-1988          |
|   |   |                     | EP 0194495 A               | 17-09-1986          |
|   |   |                     | EP 0191503 A               | 20-08-1986          |
|   |   |                     | EP 0191504 A               | 20-08-1986          |
|   |   |                     | EP 0191505 A               | 20-08-1986          |
|   |   |                     | EP 0193830 A               | 10-09-1986          |
|   |   |                     | EP 0192280 A               | 27-08-1986          |
|   |   |                     | JP 2283014 A               | 20-11-1990          |
|   |   |                     | JP 2283077 A               | 20-11-1990          |
|   |   |                     | JP 2584164 B               | 19-02-1997          |
|   |   |                     | JP 6020945 A               | 28-01-1994          |
|   |   |                     | JP 4021334 B               | 09-04-1992          |
|   |   |                     | JP 57500670 T              | 15-04-1982          |
|   |   |                     | US 5362682 A               | 08-11-1994          |
|   |   |                     | WO 8102948 A               | 15-10-1981          |
|   |   |                     | US 4816420 A               | 28-03-1989          |
|   |   |                     | US 4837182 A               | 06-06-1989          |
|   |   |                     | US 5549747 A               | 27-08-1996          |
|   |   |                     | US 4727047 A               | 23-02-1988          |
|   |   |                     | US 5676752 A               | 14-10-1997          |
|   |   |                     | US 5588994 A               | 31-12-1996          |
|   |   |                     | US 5217564 A               | 08-06-1993          |
|   |   |                     | US 5328549 A               | 12-07-1994          |
|   |   |                     | US 5273616 A               | 28-12-1993          |
| US 5871870                                | A | 16-02-1999          | US 5676853 A               | 14-10-1997          |

# PCT

REC'D 20 NOV 2001

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT


(PCT Article 36 and Rule 70)

|  |  |  |   |
|--|--|--|---|
| Applicant's or agent's file reference<br>NS/99096 WO                                       |  | <b>FOR FURTHER ACTION</b>                    | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No.<br>PCT/GB00/03202  | International filing date (day/month/year)<br>17/08/2000 | Priority date (day/month/year)<br>17/08/1999 |   |
| International Patent Classification (IPC) or national classification and IPC<br>H01L21/033 |  |  |   |
| Applicant<br>IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY ... et al.                            |  |  |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 10 sheets, including this cover sheet.  
  
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☒ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

|   |   |
|---|---|
| Date of submission of the demand<br><br>12/03/2001  | Date of completion of this report<br><br>15.11.2001                       |
| Name and mailing address of the international preliminary examining authority:<br><br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized officer<br><br>Krause, J<br><br>Telephone No. +49 89 2399 2829 |



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/03202

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-15 as originally filed

**Claims, No.:**

1-20 as originally filed

**Drawings, sheets:**

1/6-6/6 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/03202

- ☐ the description,      pages:  
☐ the claims,      Nos.:  
☐ the drawings,      sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

|                               |      |        |                         |
|-------------------------------|------|--------|-------------------------|
| Novelty (N)                   | Yes: | Claims | 1 - 16                  |
|                               | No:  | Claims | 17 - 20                 |
| Inventive step (IS)           | Yes: | Claims | 10, 14 - 16             |
|                               | No:  | Claims | 1 - 9, 11 - 13, 17 - 20 |
| Industrial applicability (IA) | Yes: | Claims | 1 - 20                  |
|                               | No:  | Claims |                         |

2. Citations and explanations  
**see separate sheet**

**VI. Certain documents cited**

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/03202

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claims are fully supported by the description, are made:  
**see separate sheet**

**Concerning Section V:**

**I. Claim 1:**

1. The article by M. Green et al.: "Quantum pillar structures on  $n^+$  gallium arsenide fabricated using 'natural' lithography", which appeared in Applied Physics Letters, American Institute of Physics. New York, US, vol. 62, No. 3 (18 January 1993), pages 264-266, XP000334805; ISSN: 0003-6951 (= D1) describes (cf. page 264, left column, last paragraph, to page 265, third paragraph) a method of fabricating electronic, optical or magnetic devices requiring an array of large numbers of small features in which regions defining individual features of the array are formed by the steps of:
  - (a) depositing a very thin film of CsCl, which is a highly soluble solid, onto a flat substrate, which is hydrophilic after the washing treatment,
  - (b) exposing the film to solvent vapour under controlled conditions so that the film reorganises into an array of discrete hemispherical islands on the surface, and
  - (e) subjecting the resulting structure to a suitable etching process so as to form a well at the position of each hole.
2. The subject-matter of claim 1 differs therefrom in that a film of a suitable material is deposited onto the whole surface covered with the CsCl hemispheres, and in that the hemispherical structures are removed together with their coating of material leaving a material layer with an array of holes corresponding to the islands.
3. The article by C. Haginoya et al.: "Nanostructure array fabrication with a size-controllable natural lithography", which appeared in Applied Physics Letters, vol. 71, No. 20 (17 November 1997), pages 2934-2936, XP002152782, (= D2) describes a method of fabricating electronic, optical or magnetic devices requiring an array of large numbers of small features as well and therefore belongs to the same narrow technical field. Document D2 describes (cf. page 2934, left column, last paragraph, to page 2935, left column, first paragraph, and Fig. 1) a method to form a polystyrene bead array and a Pt-Pd thin film on the entire surface. The polystyrene beads are then removed with the Pt-Pd film thereon.

4. The document D1 uses the CsCl hemispheres as etching mask, while document D2 forms the mask from a material potentially better suited for this purpose. Thus the person skilled in the art, who would routinely take the contents of both documents D1 and D2 into account, would combine documents D1 and D2 and obtain a method with all the features of claim 1 without employment of inventive skill. Claim 1 is therefore not considered to meet the requirement of Article 33(3) PCT.

## **II. Claims 2 to 10:**

1. The additional features of claims 2 and 3 are known from document D1. Therefore claims 2 and 3 are also not considered to meet the requirement of Article 33(3) PCT.
2. The additional feature of claim 4 falls into the competence of an average practitioner, in particular since silicon substrates are used also in document D1. Claim 4 is therefore not considered to meet the requirement of Article 33(3) PCT.
3. The additional features of claims 5, 6, and 9 are known from both documents D1 and D2. Claims 5, 6, and 9 do therefore not appear to meet the requirement of Article 33(3) PCT either.
4. Since aluminium is often used in semiconductor technology, the use of this material instead of Pt-Pd alloy as in document D2 would at least be tried by a person skilled in the art, who would have a reasonable prospect of success. Claim 7 is therefore also not considered to meet the requirement of Article 33(3) PCT.
5. Lift-off processes are also widely known in the art of semiconductor technology, and a solvent is generally employed to remove the underlying layer. It is known from document D1 that CsCl is solved by water, and the person skilled in the art would routinely try to employ this solvent to remove the CsCl hemispheres, again with a reasonable prospect of success. Ultrasonic agitation is further a routine method step to improve the solving action. For these reasons, claim 8 is also not considered to meet the requirement of Article 33(3) PCT.
6. The grazing incidence of a vapour stream may be as such known to a person skilled

in the art, however, not in the context of an array of hemispheres or beads. The person skilled in the art would not derive such a method as in claim 10 from document D2, where the beads have to be reduced in size by etching. Therefore claim 10 is considered to meet the requirements of Article 33(2) and (3) PCT.

**III. Claims 11 to 16:**

1. The document WO-A-98/47170 (= D3), which is not cited in the international search report, is considered to represent the most relevant state of the art with respect to claims 11 to 16. Its family document EP-A-0 942 459, which is published after the priority date of the present application, is considered to be a complete translation of document D3, and all the references will be made to the European application of D3. Copies of the International and the European applications are annexed to this communication. It should also be mentioned that the priority document of the present application does not contain the subject-matter of claims 11 to 16, so that these claims are not entitled to the priority date claimed by the present application. Document D3 is therefore considered as prior art in the sense of Rule 64.1 PCT.
2. Document D3 describes a method of forming a crystalline heterostructure comprising two component materials having different lattice structures, in which the materials are arranged to contact each other via a plurality of discrete regions, which comprises the steps (cf. paragraphs [0028], [0029], [0121] to [0127], and Figs 1A-1C) of forming a layer of the first material (11), forming an insulating layer (13) on the surface of the first material having openings therein, and growing crystals of the second material (16) on the first material (11) in the regions exposed by the holes so as to form an island at the position of each opening.
3. The subject-matter of claim 11 differs therefrom in that the openings in the insulating layer are formed by a method according to claim 1.
4. The method of growing a semiconductor layer on an insulating layer and the forming of holes in the insulating layer are mutually independent methods which do not result in any unexpected synergetic effect. The person skilled in the art, who has routinely arrived at a mask layer as specified by claim 1, would also know from document D3

how a layer having less crystal defects is grown. He would therefore combine document D3 with documents D1 and D2 and obtain a method with all the features of claim 11 without employment of inventive skill.

5. As a consequence, claim 11 is not considered to meet the requirement of Article 33(3) PCT.
6. The additional features of claims 12 and 13 are known from document D3 as well. Claims 12 and 13 are thus also not considered to meet the requirement of Article 33(3) PCT.
7. The use of the method of document D3 to grow two metals or a metal and a different material is neither known nor rendered obvious from the available prior art. Therefore claims 14 to 16 are considered to meet the requirements of Article 33(2) and (3) PCT.

#### **IV. Claims 17 to 20:**

1. Claim 17 is directed to a gate electric device, an integrated optical waveguide device, or a surface acoustic delay line. Such devices and the associated circuitries are known in the art. Such devices do not become new or inventive simply because they are fabricated by a method different from the methods used in the prior art. Since also insulators having a high dielectric constant are known, claims 17 and 18 are not considered to meet the requirements of Article 33(2) and (3) PCT.
2. The array of devices according to claim 19 and the crystalline heterostructure according to claim 20 are known from document D3. Therefore also claims 19 and 20 are not considered to meet the requirements of Article 33(2) and (3) PCT.

**Concerning Section VI:**

Certain published documents (Rule 70.10)

The article by S. Tsuchiya et al.: "Structural Fabrication Using Cesium Chloride Island Arrays as a Resist in a Fluorocarbon Reactive Ion Etching Plasma", which appeared in: Electrochemical and Solid-State Letters, vol. 3, No. 1 (January 2000), pages 44-46, XP002152784, does not belong to the state of the art in the sense of Rule 64.1 PCT. It appears to anticipate the subject-matter of claims 1 to 9, for which the priority claim appears to be valid.

**Concerning Section VII:**

1. To meet the requirements of Rule 6.3(b) PCT, the independent claims should be properly cast in the two-part form, with those features which in combination are part of the closest prior art (see document D1) being placed in the preamble.
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2, and D3 is not mentioned in the description, nor are these documents identified therein.
3. The unit of measure employed on pages 4 to 6 is not additionally expressed in terms of the units stipulated by Rule 10.1(a) PCT.
4. In claim 16 the chemical elements Ma or CO<sub>2</sub> are not known and should be corrected. The formula "CsCl" is often misspelled as "CsC1" throughout the application.

**Concerning Section VIII:**

1. Claims 17 to 20 are directed to a device but tend to describe the features of the device in terms of a process for its manufacture. Such product-by-process claims can only be clear in the sense of Article 6 PCT, if the process features can be unambiguously derived from the finished device, which is at least not always the case here. The device features characterising the inventive device should be clearly specified instead.
2. The expressions "highly soluble" and "high dielectric constant" in claims 1 and 18, respectively, are vague and indefinite and therefore render the scope of protection sought by the claims unclear (Article 6 PCT).
3. The only example for a material suitable for the process of claim 1 is CsCl. The generalisation to any "highly soluble" material or to a salt has therefore no basis in the description, so that claims 1 and 2 are not supported by the description (Article 6 PCT).